

## Predictive Functions of WA and GA in L1 and L2 Japanese

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### Abstract

This paper assesses the predictive functions of two particles, WA and GA, and examines how these particles are interpreted by L1 and L2 speakers of Japanese. An approach of subject-ellipsis resolution using an audio-stimulated picture-selection task was adopted to compare between the two groups how these particles were respectively used to identify an elided subject (e.g. *Taro-WA/GA okotta kara kaetta* ‘Because Taro<sub>i</sub> was angry  $\emptyset_{i/k}$  went home’). The results of the L1 speakers showed that they, when given WA, instantly identified the elided subject as co-referencing with the WA-marked NP (e.g.  $\emptyset = \text{Taro}$ ) at an above-chance level, whereas there was individual variation in reactions to GA. These results suggest that WA has a predictive function in that L1 speakers attentively used the particle’s syntactic information and then associated the WA-marked NP as the antecedent of subsequent elided-subjects; on the other hand, GA is not a reliable source of syntactic information that induces a certain reading. The results of L2 speakers showed that WA and GA were generally not understood to serve different functions. These findings suggest that L2 speakers are confused with WA and GA, and that Japanese L2 instruction needs revising so that this confusion can be avoided.

**Key words:** Japanese particles, subject-ellipsis resolution, parsing, second language acquisition

### 1 Introduction

This paper assesses the *predictive functions* of two particles, topic marker WA and nominative-case marker GA, given in complex sentences and examines whether or not they are used by English-speaking learners of Japanese (L2ers) and if so, for what functions. Here a predictive function refers to the property of a morpheme that induces syntactic hypotheses which predicts its following syntactic-structure. In other words, comprehenders may use a given morpheme with this property to anticipate a sentential template while processing a sentence. The term predictive function, or *yosoku kinou* in Japanese, was originally used by Uchida et al. (1995) where they examined the predictive functions of WA and GA in their sentence-completion experiments. The present study, on the other hand, used an audio-stimulated picture-selection task in order to address whether these particles are used as anticipatory cues signaling subsequent syntactic-structures in response to audio-stimuli, rather than written-stimuli. This was done because audio stimuli require comprehenders to react to given sentences instantly without allowing them to rely on their metalinguistic knowledge. In order to control comprehenders’ interpretation of the identity of elided subjects, pictures displaying two different events were presented so that comprehenders would indicate their interpretation between the two and in turn the researcher would know how subject-ellipsis was resolved. Therefore, the foci of this study were placed on identifying predictive properties of WA and GA when they were given aurally as to their effects on resulting parsing, and comparing the findings with those from Uchida et al., which I will discuss more in detail in a later section of this paper. Before discussing Uchida et al.’s findings, I would like to first present

the current understanding of WA as a topic-marker and GA as a nominative-case marker proposed by Kuno (1978) and Mikami (1960, inter alia) in the following section.

## 1.1 Syntactic Functions of WA and GA

### 1.1.1. WA and GA in Complex Sentences for Subject-Ellipsis Resolution

Kuno (1978) discussed the interaction of respective WA/GA functions and subject-ellipsis in complex sentences. He termed X-WA as a sentence topic that has to be retained throughout a given complex sentence. Therefore, when a matrix-subject co-refers with the topic, it is realized as a zero-pronoun regardless of the position of the topic-NP. The sentences (1) and (2) below are Kuno's examples to explain this phenomenon.

- (1) *Taro<sub>i</sub>-WA,  $\phi_i$  byouki-na noni, gakkou-o yasum-ou to shinai.*  
 Taro-WA sick although school-ACC miss-VOL COMP do-NEG  
 'Taro<sub>i</sub>, although he<sub>i</sub> is sick, is not going to miss school.'
- (2)  *$\emptyset_i$  byouki-na noni, Taro<sub>i</sub>-WA gakkou-o yasum-ou to shinai.*  
 sick although Taro-WA school-ACC miss-VOL COMP do-NEG  
 'Although he<sub>i</sub> is sick, Taro<sub>i</sub> is not going to miss school.' (Kuno, 1978)

On the other hand, X-GA was termed as a subordinate-subject that should be elided when it co-refers with its sentence topic given in a sentence because the sentential topic, X-WA, should be retained. Therefore, the sentence (3) below is ill-formed if 'Taro' is intended to be both the subordinate- and the matrix-subject<sup>1</sup>.

- (3) \**Taro<sub>i</sub>-GA byouki-na noni,  $\phi_i$  gakkou-o yasum-ou to shi-nai.*  
 Taro-GA sick although, school-ACC miss-VOL COMP do-NEG  
 'Although Taro<sub>i</sub> is sick, he<sub>i</sub> is not going to miss school.' (Kuno, 1978)

From these observations of WA/GA functions in complex sentences, I would like to label WA an *intra-sentential topic marker* that indexes its attaching NP as a topic of an entire sentence consisting of multiple clauses, and GA an *intra-clausal subject marker* that indexes its attaching NP as a syntactic subject of its given clause, regardless of the absence/presence of additional clauses in a sentence.

Additionally, I would like to present another WA/GA phenomenon that Kuno observed in relation to subject-ellipsis resolution because this phenomenon, in addition to the distinctive functions of WA and GA described above, was included in the experimental items in the present study in order to examine whether listeners determine the identity of elided-subjects on the basis of (a) overt-NPs in the beginning of a sentence or (b) particles attaching to these NPs. Specifically, Kuno pointed out that a topic NP can be elided in a given complex sentence where its subordinate-subject refers to something/someone different from the topic, if the topic refers to the speaker. In such a case, the subordinate-subject should be overtly realized, as shown in (4) below:

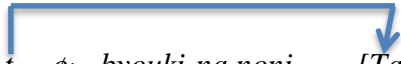
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<sup>1</sup> The GA-marked Taro *could* be the antecedent of the zero pronoun making the sentence well-formed provided the larger discussion was about how various people handle this sick-but-going-to-school question—in other words, if speaker(s) had already mentioned Hanako stayed home when sick, but Taro by contrast went to school.

- (4) *Taro<sub>i</sub>-ga byouki-na noni  $\phi_k$  gakkouni itta.* [ $\phi_k$  = “I”]  
 Taro-GA sick although school to go-PAST  
 ‘Although Taro was sick, I went to school.’

In sum, WA and GA, given in a complex sentence, index their distinctive syntactic-functions in a sentence. That is, the former plays an intra-sentential topic marker, whether attaching to an NP in the beginning or middle of a sentence, and indicates that the NP is an overarching theme of the sentence, which potentially serves as an antecedent of elided NPs. On the other hand, the latter is an intra-clause subject marker by signaling its attaching NP is the subject of the given clause only.

However, although these definitions of each particle describe their respective syntactic roles, the contrasting example sentences, (1) and (3), can be misleading in that they might give the mistaken impression that WA and GA can be two comparable particles that complement each other to fill in a sentence. Alternatively, in order to distinctively illustrate the syntactic function of WA as an intra-sentential “topic” marker, the following interpretation is proposed here. Instead of replacing GA with WA, it is necessary to explicitly indicate both covert subjects to illustrate that ‘Taro’ is the topic of the sentence, which co-refers with these covert subjects. In other words, the subjects are covert because their identity has been realized as the topic of the sentence, which is marked with WA. Therefore, I propose to add another notation of the zero-subject NP “ $\emptyset$ ” in the sentences, (1) with the topic scrambled and (2) with the topic in situ, so that the matrix-subject and the topic of the sentence are discerned. Thus, the proposed interpretation is illustrated as shown in (1’) and (2’) below:

- (1’)  *t<sub>x</sub>  $\phi_i$  byouki-na noni, [Taro<sub>i</sub>-WA]<sub>x</sub>  $\phi_i$  gakkou-o yasum-ou to shi-nai.*  
 sick although Taro-WA school-ACC miss-VOL COMP do-NEG  
 ‘As for Taro<sub>i</sub>, although he<sub>i</sub> is sick, he<sub>i</sub> is not going to miss school.’
- (2’) *Taro<sub>i</sub>-WA,  $\phi_i$  byouki-na noni,  $\phi_i$  gakkou-o yasum-ou to shi-nai.*  
 Taro-WA sick although school-ACC miss-VOL COMP do-NEG  
 ‘As for Taro<sub>i</sub>, although he<sub>i</sub> is sick, he<sub>i</sub> is not going to miss school.’

This proposed interpretation enables a better representation of WA as a topic marker, illustrating that the WA-marked NP ‘Taro’ serves as an antecedent of or a co-reference with both the subordinate- and matrix-subjects which are elided because the topic of a sentence is explicitly indicated. However, the representations in (1’), (2’), and (3) may not clearly show how WA-marked- and GA-marked NPs are differently positioned in a syntactic hierarchy. Therefore, let us see how the respective scopes of WA and GA should be interpreted, following Mikami’s (1960) notion of binding scopes.

### 1.1.2. Scopes of WA and GA in a Sentence

Mikami (1960) analyzed the functional differences of WA and GA from the notion of bidding scopes. According to him, the scope of WA extends from a clausal to sentential or discourse level, as observed in the phenomena called *konma goe* ‘going beyond commas’ and *piriodo goe* ‘going

beyond periods' respectively, whereas the scope of GA ranges within a clause. Moreover, Mikami (1975) explicitly indicated that it is a misperception to set up a division after GA, as in the English language where the subject and its predicate are structured in two parts, and continued that it is more natural/Japanese-like to divide a sentence after WA because of its larger binding scope. An example of these comparative features of WA and GA is shown in Sentence (5) below, illustrating that WA marks the topic of a sentence or that of the discourse, representing the general topic of what follows, and that GA marks an item or entity whose characteristics are described under the WA-marked topic.

- (5) [TopP *Zou-WA* [TP *hana-GA nagai*]].  
 Elephant-WA trunk-GA long  
 'As for elephants, their trunks are long.' (Mikami, 1960)

Application of Mikami's analysis of functional differences between WA and GA to a complex sentence enables us to observe their differing levels in a syntactic structure, as demonstrated in (6) and (7) below:

- (6) [TopP *Taro<sub>i</sub>-WA* [TP [[SubP [TP  $\phi_i$  *okotta*] *kara*]  $\phi_i$  *kaetta*]].  
 Taro-WA was-upset because went-home  
 'As for Taro<sub>i</sub>, because he<sub>i</sub> was upset, he<sub>i</sub> went home.'
- (7) [TopP  $\emptyset_{i/k/z}$  [TP [SubP [TP *Taro<sub>i</sub>-GA okotta*] *kara*]  $\phi_k$  *kaetta*]].  
 Taro-GA was-upset because went-home  
 'Because Taro<sub>i</sub> was upset, he<sub>k</sub> went home.'

Sentence (6) illustrates that 'Taro,' as a topic of the sentence, is an antecedent of both subordinate- and matrix-subjects, which would be marked with GA as an intra-clausal subject marker and are elided because they co-refer with the topic. On the other hand, the sentence (7) illustrates that 'Taro' marked with GA is a subordinate-subject, differing its identity from that of the matrix subject. With the topic of the sentence unspecified, its identity should be subject to the given context, rendering the assumption possible that it could have been Taro (= i), or someone else who went home (= k), or someone or something else that is not identical with Taro or the person who went home (= z).

Combining the proposals by Kuno (1978) and Mikami (1960), let us deduce, as follows: WA indexes a sentence topic, whose scope covers the entire sentence and in turn licenses the WA-marked NP, positioned in a TopP, to serve as an antecedent of both subordinate- and matrix-subjects when they are elided; GA indexes its attaching NP as the subordinate-subject only, indicating that GA-marked NPs position in TPs. In other words, WA's higher positioning than GA may explain its strong effect on subject-ellipsis resolution for a co-referencing reading whereas GA's lower positioning restricts its scope within a given clause and therefore does not associate with constituents in another clause. Uchida et al., that is discussed more in detail in the following section, demonstrated how these proposals about WA and GA are actually observed in L1 Japanese. These findings turned out to be congruent with those of L1ers in the present study.

## 1.2. Predictive Functions of WA and GA in a Sentence-Completion Experiment

Uchida and her colleagues (1995) examined WA and GA targeting native speakers of Japanese (L1ers) in a sequence of sentence-completion experiments, and suggested that these particles have predictive functions directing comprehenders to specific interpretations depending on given particles. That is, WA, as a sentential-scoping subject marker, invites a co-referencing subject with the WA-marked NP in the subsequent clause; whereas GA, as a clausal-scoping subject marker, invites various types of nouns, including co-references with the GA-marked NP, other animates, and inanimates, as a subject in the subsequent clause. More specifically, the researchers presented 67 L1ers with one phrase at a time so that the participants made up sentences according to their interpretation of given phrases. Relevant to the present study is that when two sets of subordinate clauses were presented, the participants added matrix clauses to each of the subordinate clauses to turn them into complex sentences<sup>2</sup>. The stimuli were two minimal-pairs of subordinate clauses differing from each other in the particles, WA and GA, attaching to the NP in the beginning of the clause. The pairing sentences which Uchida et al. provided as examples of their experimental items for participants to write the following matrix clause are as follows in (8) and (9):

- (8) *Urawashi-no A-ko-san-WA toshin-no Nihonbashi-ni*  
 Urawa-city-GEN A-ko-Ms-TOP city-center-GEN Nihonbashi-LOC  
*tsuukin-shite-ita koro,*  
 commuting-PROG-PAST when  
 ‘As for Ms. A-ko, when she was commuting to Nihonbashi in the city center, ...’

- (9) *Urawashi-no A-ko-san-GA toshin-no Nihonbashi-ni*  
 Urawa-city-GEN A-ko-Ms-NOM city-center-GEN Nihonbashi-LOC  
*tsuukin-shite-ita koro,*  
 commuting-PROG-PAST when  
 ‘When Ms. A-ko was commuting to Nihonbashi in the city center, ...’

The results showed that all 67 participants (100%) provided the matrix-subject co-referencing with A-ko when given the subordinate clause (8). More specifically, the subordinate clause starting with a WA-marked NP induced only predicates with null-subjects (e.g.  $\emptyset$  *chikatetsu-o riyuu-shite-ita* ‘ $\emptyset$  was using the subway’). As for the case when GA was given, results show that 38 participants (56%) wrote NPs in the matrix-subject position that referred to someone/something other than A-ko, when the subordinate clause (9) was given (e.g. *atarashii biru-ga tsugitsugi ni kensetsu-sarete-ita* ‘new buildings were being constructed one after the other’). From these findings, Uchida et al. concluded that the scope of WA-attached NPs that are marked as sentential-topics covered the entire sentence, inducing the interpretation that the identity of the matrix-subject should co-refer with the WA-attached NP and in turn allowing the manifestation of co-referring null-subjects; on the other hand, the scope of GA-attached NPs was limited within the given embedded-clause, inducing the interpretation that the identity of the matrix-subject could be different from the GA-attached NP. In sum, Uchida et al. claimed that both WA and GA have predictive functions that informed comprehenders of their respective syntactic-scopes (the sentence-wide scope of WA and the clause-wide scope of GA) and triggered distinctive interpretations.

<sup>2</sup> In Japanese, it is canonical that adverbial clauses are followed by matrix clauses (Kuno, 1978), as is typically observed in OV languages (Comrie, 1983).

However, their analysis of the given matrix clauses produced by the participants in reaction to (8), which were all predicates with null-subjects, may be problematic because it is unknown whether the null-subject was meant to refer to A-ko or someone else, such as *watashi* ‘I’ that quite often can be covert. At the intuitive level I would agree with Uchida et al. claiming that WA invited a co-referencing reading and that the identity of the zero-pronoun should likely be A-ko. Nevertheless, it would have established a stronger case if some evidence that explicitly illustrates the null-subject co-referring with A-ko, like an overt pronoun (e.g. *kanojo* ‘she’) or some referent (e.g. *sono-hito* ‘that person’), was provided. This issue is addressed in the present study by presenting participants with pictures that give only two choices for the identity of given elided-subjects, and in turn explicitly provide information of how null-subjects are interpreted.

Additionally, it is important to note that the written production elicited in Uchida et al. study, which they claim was generated as a reaction to either particle, may have allowed the participants time to reflect on their interpretation. In other words, it is yet to be determined whether L1ers distinguish WA and GA or use them as anticipatory cues in a spontaneous setting. The following section discusses how particles (e.g. case-markers) are attested to serve as anticipatory cues in processing studies of Japanese.

### 1.3. Particles as Anticipatory Cues

More recently, research on processing in L1 Japanese has shown that L1ers use case-markers as anticipatory cues in sentence-processing (Kamide, Altmann, & Haywood, 2003; Miyamoto, 2002; Mitsugi & MacWhinney, 2016; Yamashita, 1997). The effect of case-markers (e.g. nominative-marker *ga*, accusative-marker *o*, and dative-marker *ni*) has been demonstrated as an influential predictive-determinant in simplex sentences of monotransitive and ditransitive constructions (Kamide, et al., 2003; Mitsugi & MacWhinney, 2016; Yamashita, 1997, among others) as well as in complex sentences with relative clauses (Miyamoto, 2002) in L1 Japanese, whereas it has been found that case-marking is not such a reliable cue in L2 Japanese (Kilborn & Ito, 1989; Mitsugi & MacWhinney, 2016). In particular, Mitsugi and MacWhinney (2016), using a visual-world eye-tracking paradigm, examined if L1-English learners of Japanese (L2ers) use morphosyntactic information of case-markers to predict forthcoming syntactic elements; and the results showed that they did not. More specifically, the researchers compared L2ers to L1ers in their predictive performance based on given case-markers in the sentences as follows in (10), (11), and (12):

(10) Canonical ditransitive:

*Gakkou-de majimena gakusei-ga kibishii sensei-ni*  
 school-LOC serious student-NOM strict teacher-DAT  
*shizukani testuto-o watashita.*  
 quietly exam-ACC handed over  
 ‘At the school, the serious student quietly handed over the exam to the strict teacher.’

(11) Scrambled ditranstive:

*Gakkou-de kibishii sensei-ni majimena gakusei-ga*  
 school-LOC strict teacher-DAT serious student-NOM  
*shizukani tesuto-o watashita.*  
 quietly exam-ACC handed over

(12) Transitive:

*Gakkou-de majimena gakusei-ga kibishiisensei-o shizukani karakatta.*  
 school-LOC serious student-NOM strict teacher-ACC quietly teased  
 ‘At the school, the serious student quietly teased the strict teacher.’

Participants saw a visual display showing four pictures: an agent, a recipient, a theme, and a distractor, while listening to spoken sentences, as shown in (10), (11), and (12) above. Their eye movements were monitored to enable the researchers to time-lock each eye movement corresponding to a segment of the auditory stimuli. Results show that L1ers started looking at the theme, or the third element, before it was mentioned in the canonical and scrambled conditions; whereas the rate of the proportion at which these participants looked at the theme in the accusative condition was lower. These results suggest that L1ers were attentive to given case-markers and predicted an upcoming element. On the other hand, L2ers demonstrated similar results across the conditions, suggesting that case-marking information was not used efficiently by these participants. In sum, this study confirms the previous studies that demonstrated L1ers’ use of case-markers as anticipatory cues in sentence-processing, and also presents a case that L2ers do not use case-marking information for predictive processing.

Given Mitsugi and MacWhinney (2016) and several other studies (Kamide et al., 2003; Yamashita, 1997; 2008) that show L1ers’ relying on case-markers for syntactic predictions, however, it is also important to keep in mind that Uchida et al. (1995), in their sentence-completion experiment of L1ers to investigate the predictive functions of GA and WA, show that GA attaching to an NP in the beginning of a subordinate clause was an unreliable cue even in L1 Japanese that includes a certain reading; on the other hand, WA was demonstrated as a reliable cue that should invite a co-referencing reading of its following matrix-subject with the WA-marked NP. Such different reactions to GA may have to do with different experimental methods (e.g. written production vs. eye-tracking) or sentence structures used (e.g. complex sentences vs. single sentences), or some other factors, which however are beyond the scope of the present study.

The present study examined the predictive functions of GA and WA. As was studied in Uchida et al. (1995), GA is often compared with WA because of their similar ability of attaching to an NP in the subject position. However, their syntactic positions and functions differ from each other, as is observed from the terms given respectively: GA as a nominative-case marker and WA as a sentential-topic marker (Kuno, 1978, *inter alia*). As previously mentioned, findings of Uchida et al. showed that WA attaching to an NP in the beginning of a subordinate clause was a strong cue that induces the interpretation that the identity of the matrix-subject co-refers with the WA-attached NP. This result indicates that not only case-markers, as demonstrated in processing studies (Kamide et al., 2003; Mitsugi & MacWhinney, 2016; Yamashita, 1997; 2008), but also the topic-maker, or a non-case-marking particle as demonstrated in Uchida et al, has a predictive function, serving as an anticipatory cue. Therefore, I assume that both the particles, GA and WA, have the potential to signal subsequent syntactic-templates to facilitate efficient parsing. In order to address the presence or absence of the respective particles and how they are used for parsing, the present study adopts an approach of subject-ellipsis resolution. In the following section, the rationale for the methodology of subject-ellipsis resolution is discussed and a new interpretation of syntactic functions of WA and GA in complex sentences is proposed.

#### 1.4. Syntactic Roles of WA and GA in Complex Sentences for Subject-Ellipsis Resolution

The present study uses an approach of subject-ellipsis resolution in complex sentences to investigate the respective functions of WA and GA that may induce distinctive syntactic hypotheses. The rationale for using this approach is that it allows us to observe how comprehenders use the NP that is marked by either WA or GA in the beginning of a sentence to associate with the identity of elided subject, on the basis of the assumption that WA and GA demarcate their binding scopes differently although they share the ability to attach to an NP in the beginning of a sentence (Mikami, 1960, *inter alia*). That is, WA indicates that its attaching NP is the sentential topic, and therefore when the topic and syntactic-subject are identical, it is natural that the latter becomes covert (e.g. *Taro-WA  $\phi$  kaetta*. ‘As for Taro<sub>i</sub>, he<sub>i</sub> went home.’). More relevant to the present study, when given in a complex sentence, both subordinate and matrix syntactic-subjects become covert when they co-refer with the WA-marked sentential topic (Kuno, 1978; Nariyama, 2000; 2002; Uchida et al. 1995) (e.g. *Taro-WA  $\phi$  okotta kara  $\phi$  kaetta* ‘As for Taro<sub>i</sub>, because he<sub>i</sub> was upset, he<sub>i</sub> went home’). In sum, a WA-marked NP represents the sentential topic serving as an antecedent of its subsequent elided syntactic-subject(s), demarcating no binding boundary in a given sentence. This assumption about WA leads to the prediction that WA induces a co-referencing reading to identify the elided subject because the ellipsis has occurred as a result of topicalization. On the other hand, GA indicates that its attaching NP is the syntactic-subject of a clause (Kuno, 1978; Nariyama, 2000; 2002; Uchida et al, 1995). Given in a complex sentence, when one of the subject NPs is marked by GA and the other subject is elided, there seems to be a tendency that the identity of the elided subject is different from the GA-marked NP (Kuno, 1978; Nariyama, 2000; 2002; Uchida et al. 1995) (ex. *Taro-GA okotta kara  $\phi$  kaetta* ‘Because Taro<sub>i</sub> was upset,  $\phi_k$  went home’). Therefore, GA tends to demarcate its scope at the beginning and end of a given clause, which leads to the prediction that GA likely induces an NP that is different from the GA-marked NP; otherwise GA-marked NPs would be marked with WA. In this way, the approach using subject-ellipsis resolution in complex sentences enables observations of how WA and GA are respectively interpreted and used to predict an unfolding syntactic structure.

While it is commonly agreed that WA attaching to an NP in the beginning of a complex sentence is a sentential-topic marker and that GA in this position is a clausal-subject marker, limiting its scope within a given scope (Kuno, 1978), I would like to offer the following schemas, as shown in (13a) and (13b) below, to represent my proposed interpretations, in reference to these conceptualizations of the particles, as well as proposals of Mikami (1960; 1975) and the empirical L1 data from Uchida et al. (1995)<sup>3</sup>. These interpretations allow us to have a tentative but unitary understanding of the mental representation for the syntactic construction with regard to WA and that of GA.

(13) Proposed interpretations:

- a. WA: a sentential-topic marker indexing Taro as the antecedent of both subordinate and matrix subjects, both of which are elided as a result of the topicalization

[<sub>TopP</sub> *Taro<sub>i</sub>-WA* [<sub>TP</sub> [<sub>SubP</sub> [<sub>TP</sub>  $\phi_i$  *okotta*]     *kara*]      $\phi_i$  *kaetta*]].

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<sup>3</sup> I referred to the data of Uchida et al. (1995) because their findings show the participants’ different reactions to WA (100% of inducing co-referencing NPs) and GA (56% of inducing different referents). However, these findings were not reflected on their analyses in that the researchers concluded only to generalize WA as an inter-clausal subject marker and GA as an intra-clausal subject marker, without addressing any potential factor of the remaining 44% of the co-referencing reading induced by GA.





use the index to make connection to its subsequent units in the sentence. Because of this, when the following subjects are elided, their identity is likely to be interpreted as co-referring with the WA-marked NP:

[*Taro<sub>i</sub>-WA* [[ $\phi_i$  *okotta* *kara*]  $\phi_i$  *kaetta*]].  
 Taro-TOP was-angry because went-home  
 ‘As for Taro<sub>i</sub>, because he<sub>i</sub> was angry, he<sub>i</sub> went home.’

- (14) b. L1ers may or may not interpret a GA-marked NP given in the beginning of a sentence as an antecedent of its subsequent elided subject because the particle GA does not signal much of subsequent elements in a separate clause. Therefore, when the following subject is elided, its identity depends on listeners’ perception in response to any available cues:

[ $\emptyset_k$  [[*Taro<sub>i</sub>-GA* *okotta* *kara*]  $\phi_{i/k/z}$  *kaetta*]]  
 Taro-NOM was-angry because went-home  
 ‘Because Taro<sub>i</sub> was angry, xhe<sub>i/k/z</sub> went home.’

- (14) c. L2ers will not use case-marking information for subject-ellipsis resolution. The identification of elided subjects will be determined based on NPs given in the beginning of a sentence, whether they are marked by WA or GA.

[ $\emptyset_k$  [[*Taro<sub>i</sub>-WA/GA* *okotta* *kara*]  $\phi_i$  *kaetta*]]  
 Taro-TOP/NOM was-angry because went-home  
 ‘Because Taro<sub>i</sub> was upset, xhe<sub>i</sub> went home.’

While testing these predictions, the present study aims to assess the predictive function of WA and GA when aurally given to L1ers and L2ers with regard to [1] the effects of WA and GA in sentence-parsing, or how the particles are used to resolve the identity of the elided matrix-subject, and [2] how similarly or differently L2ers perform when compared to L1ers. The data obtained from the present study, although studied in different paradigms from previous studies, also offer further insight into [1] respective functions of WA and GA given in complex sentences for subject-ellipsis resolution, [2] how particles, particularly WA, facilitate comprehenders in defining subsequent constructions in L1 Japanese, and [3] how such predictive functions are (un)used in L2 Japanese.

In the following sections in this paper, firstly, I will examine the predictive functions of WA and GA in complex sentences in two experiments: one targeting L1ers to identify properties of WA and GA as anticipatory cues during sentence-parsing; and the other targeting advanced L2ers to shed light on learnability of these particles with such functions. Secondly, I will discuss the results as to how these particles served as anticipatory cues for efficient parsing in L1 and L2 Japanese, and thirdly offer pedagogical implications for L2 Japanese instruction, before concluding the paper.

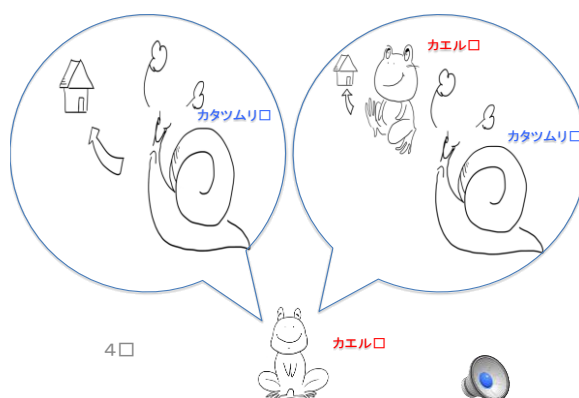
## 2 Experiment

The goal of the present study was to assess the predictive functions of WA and GA when aurally given to L1ers and L2ers. To accomplish this goal, the following research questions were addressed:

1. How do the particles, WA and GA attaching to NPs in the beginning of a complex sentence consisting of adverbial and matrix clauses, respectively affect listeners' prediction of the identity of the following matrix-subject?
2. Do highly-proficient L1-English learners of Japanese use WA and GA as anticipatory cues? If so, how?

## 2.1. Materials

A total of 68 slides were presented to participants (See Picture 1 below). Thirty of them displayed experimental items and the rest were fillers. Each slide showed a narrator describing two similar events; the difference was the performer of the second action that was to be realized as the matrix clause with zero-subjects (ex. “Snail went home” vs. “I (the narrator) went home”). Using such visual aids, participants compared two similar events, listened to a given sentence once, and selected one of the events which they thought the audio had described, by circling “Left” or “Right” in a given answer sheet.



**Picture 1.** Sample slide presented with the stimuli “*Kinou Katatsumuri-WA/GA okotta kara uchi-ni kaet-ta-nda* ‘Yesterday, because Snail was angry,  $\emptyset$  went home’.”

Using a subject-ellipsis-resolution approach, audio-stimuli make it possible to observe how each of the particles is instantly used for parsing because such stimuli likely encourage instant reaction to given particles without taking much time to use one’s meta-linguistic knowledge. Additionally, picture-selection requires participants to limit their interpretation, or conversely gives participants options, between two given scenarios (i.e. the identity of elided subject is either a co-referencing entity with a given overt NP or a different entity from a given overt NP), which allows me, the researcher, to analyze how each particle has affected the resulting interpretation and to verify or disconfirm previous studies on WA/GA for subject-ellipsis resolution.

### 2.1.1 Stimuli Sentences

All of the stimuli sentences in this study were grammatical and complex sentences. Experimental sentences consisted of an adverbial phrase (ex. *toki* ‘when, *kara* ‘because’) and a matrix-clause, where NPs marked with either WA or GA were positioned in the beginning of a sentence, which might be interpreted as an overt subordinate-subject or an antecedent of both subordinate- and matrix subjects, as well as null-subjects positioned in the matrix-subject position<sup>5</sup> (ex. *Katatsumuri-WA/GA okotta kara ø kaetta* ‘As for Snail, ø was angry ø went home’/‘Because Snail was angry, ø went home’) (See Appendix 1). This structural construction allowed me to observe [1] how WA and GA respectively affected listeners’ syntactic parsing to determine the identity of the matrix-subject, and [2] whether evidence of such syntactic parsing was demonstrated by L2ers.

Conjunctions were chosen with careful consideration of their semantic features, which can denote the simultaneousness of two different events expressed in subordinate and matrix clauses separately. Conjunctions which represent Same Subject only were used as fillers: Ex. *nagara* ‘while (V1)ing, at the same time S + V2.’ as shown in (15) below, and *te* ‘V1 and then V2,’ as shown in (16) below:

- (15) *Hanako-wa terebi-o mi-nagara, juusu-o nonda.*  
 Hanako-wa TV-ACC watch-INF-while juice-ACC drink-PAST  
 ‘Hanako, while watching TV, drank juice.’

- (16) *Hanako-wa terebi-o mi-te benkyoo-shita*  
 Hanako-wa TV-ACC watch-INF-and-then study-do-PAST  
 ‘Hanako watched TV and then studied.’

Other types of filler sentences were constructed with (a) adjectives ending either in ‘*-katta,*’ the past form of ‘*-i*’-adjectives indicating the speaker’s feeling, or ‘*-gatta,*’ the past form of ‘*-garu*’ indicating someone else’s feeling, (b) giving/receiving verbs: ‘*ageru*’ as the speaker’s action of ‘giving’ versus ‘*kureru*’ as someone else’s action of ‘giving’ toward the speaker, and (c) in the structure of ‘*V-te + ageru/kureru*’ which differentiates the direction of an action *V* as shown in (17a) and (17b) below:

- (17) a. *Ø mado-o akete-ageta.*  
 window-ACC open-INF-give-PAST  
 ‘I opened the window for X’

- (17) b. *Ø mado-o akete-kureta.*  
 window-ACC open-INF-give-PAST  
 ‘X opened the window for me.’

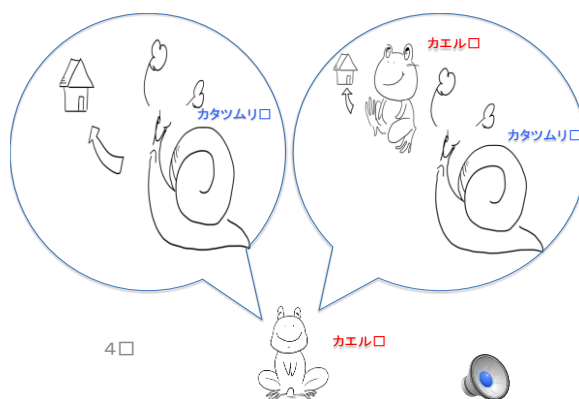
Semantic properties of verbs were also taken into consideration, following Noda’s (2006) categorization of conjunctions. According to Noda, a subordinate clause is weakly dependent on the matrix clause when a subordinate-subject can be different from that in the matrix-subject (e.g.

<sup>5</sup> Japanese, being a null-subject language, allows elided subjects at roughly 70% in conversation and 50% in written narrative texts (Hinds 1983, Mizutani 1985). How Japanese speakers determine the referential identity of elided subjects is explained as depending on contextual cues, structures (e.g. active vs. passive), verbs (e.g. transitive vs. intransitive), honorific expressions, and so on.

–*kara* ‘because’ and –*toki* ‘when’), while a subordinate clause is strongly dependent on the matrix clause when a subordinate-subject should be the same as the matrix-subject (e.g. –*nagara* ‘while’ and the hypothetical –*tara* ‘if’). In order to make subordinate clauses “weakly dependent” (Noda, 2006) on the matrix clause, paired actions described in verb phrases of subordinate- and matrix-clauses were selected according to their semantic properties being ‘multitask-able’ so that interpretation can be open for two possibilities: (a) the actions done by one person simultaneously, or (b) each action performed by two persons respectively (ex. ‘singing’/‘dancing’, but not ‘standing up’/‘sitting down’’).

### 2.1.2. Stimuli Pictures

In the given pictures, a narrator describes two events, each of which is depicted in a speech-bubble. These speech-bubbles show two similar events, but differ from each other in terms of the performer(s) of the described actions (See Picture 1 repeated below). For example, Picture 1 shows that the frog is describing two events: [1] the snail is upset and going home at the same time (SS condition) in the left picture; and [2] the frog, the narrator, is going home while the snail is upset (DS condition) in the right picture.



**Picture 1 (Repeated).** Sample slide presented with the stimuli “*Kinou Katatsumuri-WA/GA okotta kara uchi-ni kaet-ta-nda* ‘Yesterday, because Snail was angry,  $\emptyset$  went home.’”

The narrator is one of the characters in the given events to establish a natural context where one of the subjects in a complex sentence may be elided because the elided subject is the narrator, in the sense of the speaker-oriented “empathy” (Kuno & Kaburaki, 1977) and the speaker’s strong potential as theme in discourse so that he does not have to be overtly referenced (Kuno, 1978). Positioning of these contrastive pictures was counterbalanced.

### 2.1.3. Pre-Recorded Sentences

Sentences were pre-recorded by an L1 Japanese-speaking female and set up to be played by clicking the speaker icon on each Power Point slide. Each sentence was heard only once. In order to facilitate unbiased judgment by the experimental subjects, the experiment’s sentences were produced using four features. [1] All of the sentences ended with –*nda*<sup>6</sup> so the statement by a

<sup>6</sup> The extended predicate *n(o)da/n(o)desu* consists of the nominalizer *n/no* and the copula *da/desu* (Iwasaki, 1985). I added this predicate so that given sentences sounded colloquial and natural without explicitly indicating the matrix-

narrator sounds colloquial. [2] Intonational patterns of each phrase were produced as flatly as possible to minimize prosodic effects on interpretation, because of Nakanishi's (2000; 2008) observation that intonational patterns of WA differentiate topic-markers from contrast-markers. Likewise, [3] a pause (mean length: 400 ms) was given after both WA and GA because there was a strong tendency that L1ers put a longer pause after NP-WA given in the beginning of complex sentences in comparison to NP-GA (Hata, 2016) and therefore the presence/absence of a pause might affect interpretation of the respective particles in that such prosodic features could override their respective functions. [4] Because prosodic cues can function as clause boundaries in Japanese (Deguchi & Kitagawa, 2002; Hirotani, 2003; Ishihara, 2002; Kawahara & Shinya, 2008; Selkirk, 2009; Yamashita 2008), a pause was also given at every phrasal segment, such as adverbial phrases expressing time or location, object-NPs, and conjunctions following VPs, so that the pauses after WA/GA did not stand out and that the same length of duration was given at the boundary between adverbial-phrases and matrix-clauses because a longer pause given at this boundary might induce listeners to identify the elided subject as a different entity regardless of given particles (ex. *Kinou* | *Katatumuri-WA/GA* | *okotta kara* | *kaet-ta-nda* ).

## 2.2 Participants

### 2.2.1 L1 Participants: Control Group

Twenty-five native speakers of Japanese, as controls, participated in the L1 experiment. They were all undergraduate students at Hawai'i Tokai International College (mean age: 19, range: 18–20). Japanese was their first language, and none of them had been exposed to English before the age of 10. Their English proficiency level was intermediate according to their ESL instructor. The length of their living in an English-speaking environment ranged from 7 months to 23 months at the time of testing; most of them (n=18) reported 11 months and others reported 7 months (n=1), 12 months (n=1), 14 months (n=3), and 23 months (n=2).

### 2.2.2 L2 Participants: Target Group

Eighteen learners of Japanese who were taking 400-level or graduate-level Japanese courses at University of Hawai'i at Mānoa (mean age: 26.7, range: 21–40) at the time of testing were recruited. They all reported English as their L1. These learners were divided into two groups: Intermediate (n=10) and Advanced (n=8), according to their scores in the cloze-test<sup>7</sup> which was adopted from Marsden (2004) (See Appendix 2) in order to examine the correlation between their proficiency of L2 Japanese and the interpretation of WA/GA. Using Marsden's measurement, the

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subject whether its identity was interpreted as co-referencing with the WA-/GA-marked NP in the beginning of the sentence or as the “narrator” which would otherwise. One function of *n(o)da* / *n(o)desu* which has been widely observed is its “cohesive power” (Iwasaki, 1985). For example, Iwasaki (1993) reports as high as 90% frequency of *nda/ndesu* tokens with such a cohesive function in his narrative data; additionally, Yoshimi (2001) examined utterances in small talk and defined the functions of *nda/ndesu* as creating shared understanding of the situation, solidarity with the interlocutor, and consequently friendly tone.

<sup>7</sup> The text of the proficiency test was taken from *Nihongo Journal* (2002). Every 7th word was removed from the passage. A total of 42 blanks were inserted for participants to fill in with words in a contextually- appropriate form of verbs, nouns, particles, or conjunctions.

cut-off score was 12 out of 42<sup>8</sup> as it was the lowest score by a native speaker of Japanese in her study; the lowest score by the L1 participants in the current study turned out to be 13 (mean score: 18.9, highest score: 25), except two outliers<sup>9</sup> who scored 9 and 7 respectively.

## 2.3 Procedure

Each participant worked individually on a computer in a silent room. The written directions for the tasks were shown in the first slide both in English and Japanese, along with the researcher's oral explanation of the procedure. Participants were given two practice slides to go over their tasks before the actual testing section started. The procedure was as follows: [Step 1] participants saw on each Power Point slide two contrastive pictures, each of which appeared in a speech bubble coming out from the narrator (See Picture 1 above). Participants were asked to (i) identify who the narrator was, and (ii) search for differences between the two pictures. The narrator is one of the characters in the given pictures. The purpose of this step is to provide the participants with an opportunity to examine the pictures and to make sure that they know what differentiates the given pictures as to who did what; [Step 2] by clicking the audio speaker icon on the slide, participants listened to the narrator's statement through headphones; and [Step 3] after listening to the narration only once, participants were directed to choose one of two pictures to indicate their interpretation of what the narrator had just said, and indicate their answers in a given answer sheet by circling "Left" or "Right".

## 2.4 Results

### 2.4.1 Results of Native Speakers of Japanese

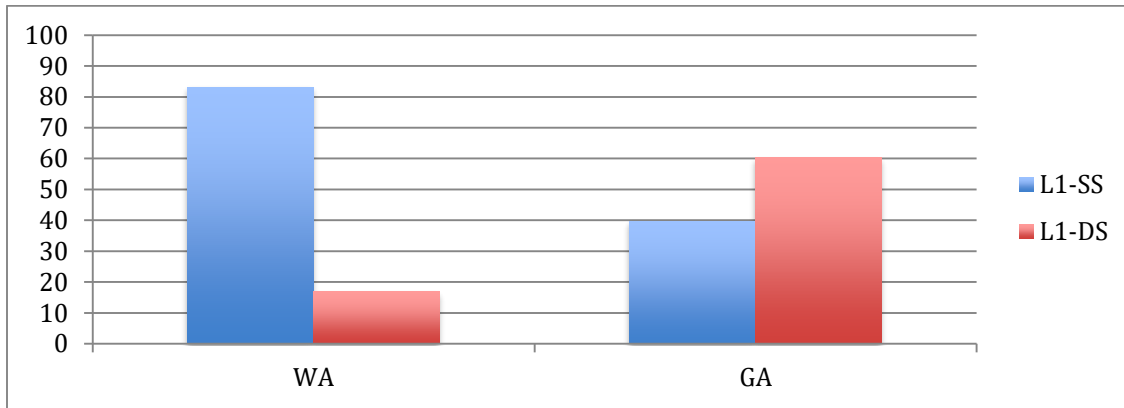
Table 1 and Chart 1 below show the overall results of L1ers' performance. In particular, WA quite frequently induced these participants to select SS pictures at an average of 83.2% of the time, demonstrating its predictive function to direct perceivers to co-reference the identity of elided subjects with the WA-marked NPs. This phenomenon was observed in Uchida et al. (1995). On the other hand, it turned out that GA was a relatively weak cue as an SS-inducer; the frequency was 39.7%. Additionally, it is important to note that GA was not so reliable as a DS-inducer, either, as shown by the frequency at 60.3% indicating that its occurrence could be random. This outcome of the GA condition also resembles that of Uchida et al., illustrating GA offering multiple-interpretations of the identity of the matrix-subject even when it was elided.

	Frequency of picture selection (%)	
	SS	DS
WA	83.2 (range: 60.0–100, SD: 10.9)	16.8 (range: 0–40.0, SD: 10.9)
GA	39.7 (range: 13.3–66.7, SD: 14.1)	60.3 (range: 33.3–86.7, SD: 14.1)

**Table 1.** Average frequency of picture selections by L1 participants.

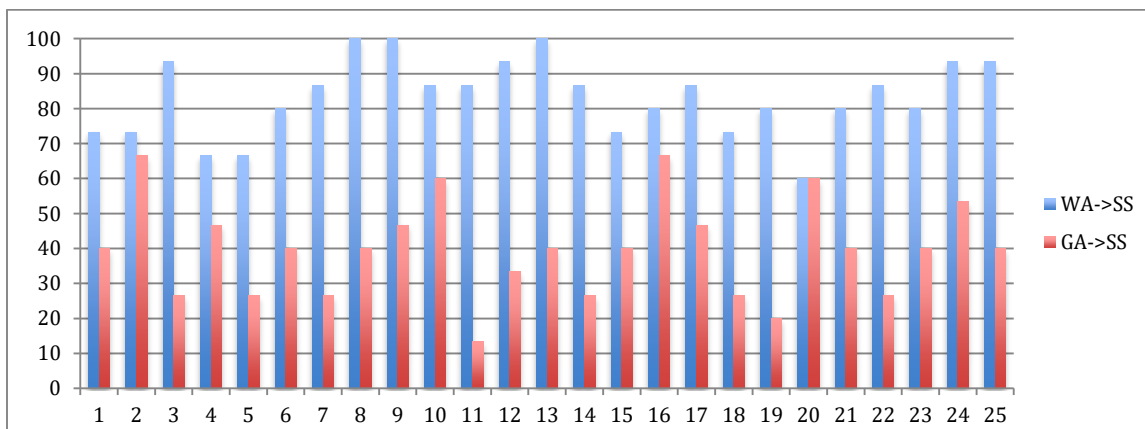
<sup>8</sup> The reason for such a small score was due to rigid grading; only the exact word from the original text was counted as a correct answer; therefore terms synonymous with the original words were rejected.

<sup>9</sup> While their scores were very low due to the nature of the rigid scoring system as described in Footnote 8 above, all of their answers were grammatically acceptable and properly conjugated where necessary.



**Chart 1.** Average frequency of picture selection by L1 participants in reaction to the particles, WA and GA: Blue-bars indicate selections of SS-pictures; red-bars indicate selections of DS-pictures.

Looking more closely, the results indeed show that L1ers in this study reacted to the respective particles in a very similar manner to those in Uchida et al. Specifically, WA likely induced L1ers to select SS pictures at an above-chance level, while GA offered the possibility of a neutral interpretation between SS and DS, respectively at a chance-level. In Figure 1 below, each blue-bar represents L1ers’ individual frequency of co-referencing interpretation by WA and red-bars represent the frequency of co-referencing interpretation by GA. This figure shows that the occurrence of WA as an SS-inducer was much more frequent than that of GA as an SS-inducer. This suggests that most L1ers more often interpreted WA as signaling a co-referencing marker. The figure also shows that almost all blue-bars are above 60% whereas some red-bars are above the chance-level and the lowest is 13%. These results suggest not only that L1ers sensitively reacted to WA in general; but also that there were individual differences among L1ers in their reaction to GA. In other words, some L1ers selected pictures based on given particles and others used some other information especially when given GA.



**Figure 1.** Horizontal axis represents each L1 participant (#1– #25); vertical axis represents the frequency of SS-interpretations (0%– 100%).

In sum, WA was more likely used as a cue informing its subsequent constituents in a sentence; whereas GA was used as a determinant to select DS pictures for some L1ers for whom



GA might serve as an anticipatory cue signaling the end of NP-GA's scope boundary, and for other L1ers WA was not an index of subsequent sentence structures. Findings from the present study and those from Uchida et al. show that L1ers are very sensitive to the particle WA as a sentential-topic marker, and that how GA is interpreted may vary among individuals and perhaps according to constituents of given sentences.

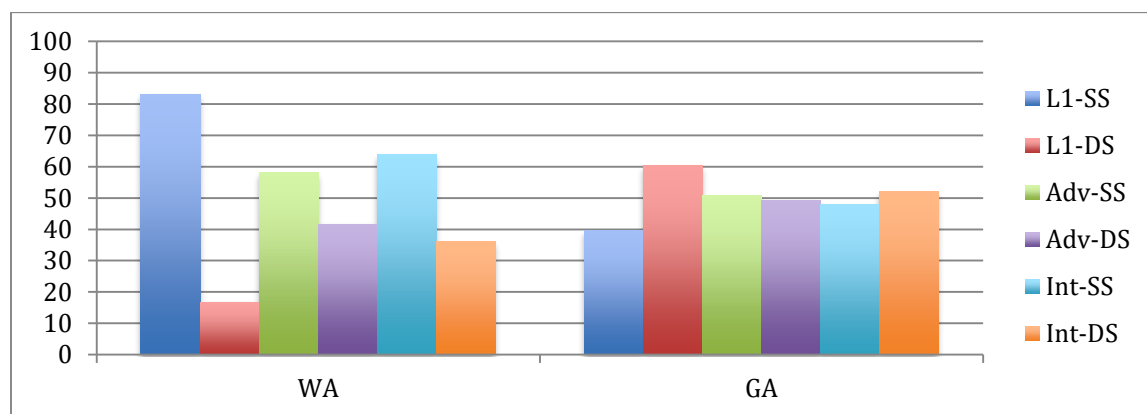
In addition, all L1ers completed the task in less than 20 minutes. This indicates that these participants spent less than 17 seconds on each slide under the condition where they had to see given pictures, click on the speaker icon to listen to the audio, make a selection, and circle their choice on a sheet. This suggests that selection was made quickly. It might be criticized that these participants were not attentive to the task; however, the accuracy of expected reactions to fillers that equally required attention confirms their dedication to the task (mean: 90.6%, range: 68.2%–100%, SD: 7.09).

#### 2.4.2. Results of Learners of Japanese

Table 2 below shows the summary of L2ers' results. Additionally, Chart 2 shows that L2ers' reactions to the respective particles (WA→SS: 61.1%/GA→SS: 49.4%, both L2 groups combined) in comparison to L1ers', which indicates that the former were not as distinctively made as the latter (WA→SS: 83.2%/GA→SS: 39.7%).

	Advanced		Intermediate	
	SS	DS	SS	DS
WA	58.3 (range: 33.3–86.7)	41.7 (range: 13.3–66.7)	64.0 (range: 46.7–86.8)	36.0 (range: 13.2–53.3)
GA	50.8 (range: 26.7–93.3)	49.2 (range: 6.7–73.3)	48.0 (range: 13.2–86.7)	52.0 (range: 13.3–86.8)

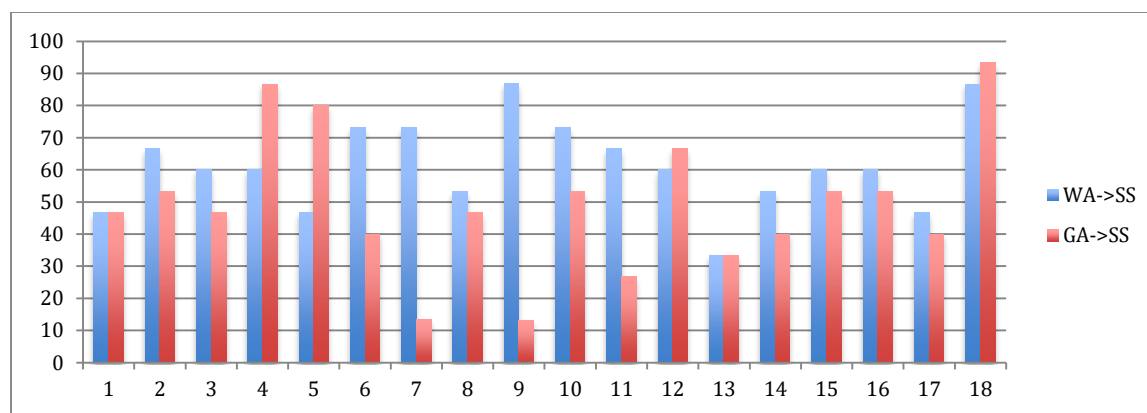
**Table 2.** Mean frequency of picture selections by each L2 group.



**Chart 2.** Average frequency of picture selection by L2 participants in reaction to the particles, WA and GA, in comparison to L1ers' results.

Figure 2 below shows L2ers' individual frequency of selecting SS pictures induced by WA (blue-bars) and SS pictures by GA (red-bars). In contrast to L1ers, most of whom more often used WA as an SS-inducer than GA, there were various reactions to WA among L2ers. More

specifically, some L2ers (e.g. Participants #6, #7, #9, and #11) performed like most of the L1ers in that they interpreted WA as an SS-inducer significantly more often than GA; however, it is notable that the frequency of WA as an SS-inducer by L2ers was overall lower than that of L1ers. Other L2ers did not distinguish WA and GA very much and selected SS-pictures induced by either particle at a similar frequency (e.g. Participants #1, #8, #12, #13, #15, #16, #17, and #18); some L2ers were induced to SS-pictures when GA was given (e.g. Participants #4 and #5). This suggests that most L2ers did not distinctively react to given particles. Participants #1 and #13 are particularly good examples of such reactions. The results by Participant #18 indicate that this L2er almost always selected SS pictures regardless of the given particles. On the other hand, Participant #9 demonstrated his/her sensitivity to the particles by assigning all WA stimuli to SS picture-types and all GA stimuli to DS picture-types. Perhaps, this participant may have received explicit instructions or learned from his/her observations to define WA as an SS-marker and GA as a DS-marker. However, such sharp distinctions were not demonstrated by L1ers in this current study or in Uchida et al. (1995).



**Figure 2.** Horizontal axis represents each L2 participant (Intermediate: #1–#10, Advanced: #11–#18); vertical axis represents the frequency of SS-interpretations (0%– 100%).

The L2ers were divided into two proficiency groups on the basis of the aforementioned cloze-test; 10 were placed as intermediate and 8 were placed as advanced. Their performance in this experiment, however, revealed no correlation between their proficiency levels and the likelihood that their WA/GA distinctions would follow the predicted SS/DS pattern. A pair-wise comparison of Type (WA, GA) and Proficiency (Advanced, Intermediate) showed that there was no effect of particle type ( $p = .26$ ), proficiency ( $p = .27$ ), or interaction ( $p = .94$ ), which confirms there was no correlation between the L2ers’ proficiency levels and their performance in reactions to WA/GA. Therefore, all the L2ers were regarded as one group, rather than two separate populations, in this study.

### 2.4.3 Results Comparisons between L1ers and L2ers

A maximal mixed effects logistic model with Type (WA, GA) and Group (L1ers, L2ers) as fixed factors and participant (with an intercept and a slope of type) and item (with an intercept and slope of group) as random factors shows the following: (a) There was a significant effect of particle types ( $b = -0.998$ ,  $p < .001$ ), indicating that L1ers and L2ers selected SS-pictures more frequently when WA was mentioned; (b) there was a main effect of Group ( $b = -0.497$ ,  $p = .024$ ) indicating

that L1ers more likely selected SS-pictures when WA was mentioned than L2ers; and (c) an interaction between Type and Group was found ( $b = 1.035$ ,  $p < .001$ ), indicating that the difference in reactions between particles was bigger for L1ers than for L2ers. In order to unpack this interaction effect, I conducted a pair-wise comparison for each group, using a mixed effects logistic regression including Type (WA, GA) as a fixed factor, and participant and item as random factors. The results of L1ers showed that there was a main effect of type ( $b = -1.1318$ ,  $p < .001$ ), indicating that they were more likely to select SS-pictures when WA was mentioned. As for L2ers, in contrast, there was no main effect of particle type ( $b = -0.283$ ,  $p = 0.176$ ), implying that they did not interpret WA and GA as having separate functions.

### 3 Discussion

The present study [1] assessed the predictive functions of particles, WA and GA attached to NPs in the beginning of a complex sentence, that might inform the identity of its following matrix-subject, and [2] examined whether such functions were perceived as anticipatory cues by proficient learners of Japanese. Congruent with a previous study on the predictive functions of WA and GA (Uchida et al., 1995), the results of the present study showed that L1ers reacted to each particle differently from each other, and that they were more likely induced to a co-referencing reading when WA was mentioned. In addition, the L1ers' quick selection of SS-pictures in reaction to WA suggests that the particle was used as an anticipatory cue to determine the identity of the matrix-subject during parsing. On the other hand, the results also show that most L1ers did not react to GA to demonstrate a particular tendency for either reading, SS or DS, indicating that the identity of a matrix-subject was determined regardless of the particle. This may suggest that the predictive function of GA, given in the construction in question, is not recognized as an anticipatory cue in L1 Japanese. Nevertheless, L1ers' reactions corresponding differently to each particle indicate that these particles were perceived as two different particles and their respective signals were used accordingly.

With regard to L2ers, results show that they understood given particles in a dinner form L1ers, despite their high proficiency in Japanese. The inconsistent selection suggests that the picture selection by this group might be made by random guess most of the time. However, it is important to note that some of the L2ers seem to have discriminated between the two particles and made selection according to given particles, as demonstrated by participants #7, #9, and #11 (See Figure 2 above), although their association between particles and their functions might be discordant from that of L1ers. Interestingly, these participants spent about 40 minutes, twice as long as L1ers, to complete the task, suggesting that they knew or thought that WA and GA have different functions and spent time to make right selections. In contrast, Participant #18, who was one of advanced participants in this study, might define WA and GA as sharing the same functions and then select SS pictures according to overt subject NPs without giving care to which particles attached to these NPs. In sum, these findings indicate that WA and GA were usually not interpreted as individual syntactic elements by these highly-proficient L2ers. Perhaps, their parsing in L2 Japanese was performed by attending only to given words at a time, without acknowledging syntactic cues from particles. Such performance by highly-proficient learners suggests a need to review instructional methods of particles in L2 Japanese classroom, in order to emphasize the significance of understanding each particle from the very beginning level, and to teach how useful such knowledge and understanding are for smooth and efficient communication in Japanese. With

this in mind, the following section offers some pedagogical implications for teaching WA and GA in L2 Japanese.

#### 4 Pedagogical Implications

The present study examined how L1 English learners of Japanese (L2ers) use given particles as anticipatory cues. Findings show that L2ers did not recognize WA and GA as two different syntactic elements, in contrast to L1ers who instantly perceived the particles, especially WA, and predicted a sentential-scoping of the WA-attached NP. This demonstrates that, in L1 Japanese, WA has a strong predictive-function that allows the listener to instantly construct a syntactic template indicating the possibility that the WA-marked NP is an antecedent of any of subsequent constituents realized as zero-pronouns: [<sub>TopP</sub> NP<sub>i</sub>-WA [<sub>TP</sub>  $\emptyset_i$  \_\_\_\_\_ ]]. Such different performances by L1ers and L2ers indicate the need to show learners, especially L1 English speakers whose language does not observe systems of case-marking or topicalization, how important and useful it is to recognize these signs from the beginning level of L2 Japanese instruction.

The manner in which L1ers reacted to WA, as if it were done automatically, suggests a potential effect of teaching WA in a top-down approach. More specifically, WA should be emphasized in its function of marking a sentential-topic by providing a formula, such as [Topic-WA [S + V]], instead of using traditional structures, such as “X-WA Y desu” / “X-WA [adjective] desu” / “X-WA [action]-masu”. Providing an extra bracket after the Topic-WA phrase represents WA’s function of topic-marking more precisely and disambiguates the structural ambiguity between NP-WA and NP-GA, as shown in this formula: [Topic-WA [Subject-GA \_\_\_\_\_]]. The prevalence of elided subjects in Japanese may also contribute to learners’ difficulty in interpreting the cues associated with WA and GA.

Explicit instruction of these cues may make them more accessible to learners. By teaching WA and GA cues based on the empirical findings presented in this study, learners may be able to develop the ability to recognize and use them and to anticipate forthcoming and hidden units for better processing and communication.

#### 5 Conclusion

The present study examined whether proficient learners of Japanese used WA and GA, attached to a subject NP in the beginning of complex sentences, as anticipatory cues to predict the identity of the other subject, when these sentences were aurally provided. Results show that L2ers interpreted WA and GA differently from L1ers and therefore they did not use given particles as anticipatory cues, in contrast to L1ers who demonstrated their sensitivity to given particles and particularly used WA as an anticipatory cue to instantly predict the identity of the other subject. These findings suggest that (1) the respective functions of WA and GA are not emphasized enough in L2 Japanese instruction, although native speakers rely on these linguistic elements for parsing, and that (2) there is need to pay more attention to WA and GA, and other particles, in L2 Japanese instruction.

In a future study I will incorporate audio-stimuli that are naturally produced, since the experimental stimuli used in this current study were intonationally controlled, to investigate the intonational effect on interpretation of WA and GA as syntactic cues in L1 and L2 Japanese. Also,

a production study will be conducted to elucidate (a) whether WA and GA are realized differently to disambiguate superficially ambiguous sentences and (b) how such different intonational-realizations are used in L2 Japanese instruction.

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## Appendix 1

## Sample items

[Experimental sentences]

- カラオケでネコ WA/GA 歌っている時踊ったんだ。  
At karaoke, when the cat was singing  $\emptyset$  danced at karaoke.
- パーティーの前にウシ WA/GA お手伝いをしている時つまみ食いしたんだ。  
Before the party, when the cow was helping out  $\emptyset$  snatched food.
- お昼にネズミ WA/GA おむすびを食べている時お茶をこぼしちゃったんだ。  
During the lunchtime, when the mouse was eating a rice ball  $\emptyset$  spilled tea.
- 昨日カタツムリ WA/GA 怒ったから家に帰ったんだ。  
Yesterday, because the snail became mad  $\emptyset$  went home.
- 来週からコアラ WA/GA ハワイに行くからお土産リストを書いていたんだ。  
Because the koala will go to Hawaii from next week  $\emptyset$  was making a souvenir list.

[Fillers]

- 学校の後で宿題が終わるまでずっと待っててくれたんだ。  
After school,  $\emptyset$  was waiting (for me) until (I) finished (my) homework.
- さっきいちごをもらったからすごうれしかったんだ。  
Because (I) received a strawberry a little while ago, (I) was very pleased.
- 先週お母さんが一週間日本に行ってたから寂しそうだったんだ。  
Because (her) mother was away in Japan for a week last week, (she) looked lonely.
- 最近いつかサーフィンしてみたいと思ってるんだ。  
Recently (I'm) thinking of wanting to go surfing someday.
- おやつにと思ってせっかくケーキを買ってきたのに食べられちゃったんだ。  
Although (I) had bought a piece of cake for afternoon tea, (I) was inconvenienced by someone else's eating it.

## Appendix 2

## Proficiency Test (a replica from Marsden (2004))

した ほんぶん よ くうらん てきせつ ご めいし どうし じよし か  
 下の本文を読みながら、空欄（ \_\_\_\_ ）に適切な語（名詞、動詞、助詞など）を書いて  
 ください。

例)

(ア) 雪がたくさん降っている\_\_\_\_、飛行機は飛ばないかもしれない。

(イ) 新しい携帯\_\_\_\_は軽くて便利です。

(ウ) 窓を閉めろと言ったのに、田中君\_\_\_\_開けたまま教室を出て\_\_\_\_  
 \_\_\_\_。

「ルームシェア」

マンションやアパートの一部屋を家族や兄弟とではなく、友人同士などで借りて共同生活をすることを「ルームシェア」と言う。欧米では一般的だ(1)\_\_\_\_\_、日本でも最近、都市部の

(2)\_\_\_\_\_の間で広まっている。「家賃が(3)\_\_\_\_\_できる」「楽しい」「安心」など、理由は(4)\_\_\_\_\_だが、海外留学などで経験(5)\_\_\_\_\_ルームシェアの利点を知る人

(6)\_\_\_\_\_増え、他人と生活すること(7)\_\_\_\_\_の抵抗感がなくなってきた(8)\_\_\_\_\_、という背景もあるよう(9)\_\_\_\_\_。

友達と一緒に暮らす：

Fさん(27歳・女性)は中国で、香港(10)\_\_\_\_\_の女性とルームシェアを経験(11)\_\_\_\_\_。現在も都内で大学時代(12)\_\_\_\_\_同級生の女性2人と2LDK(13)\_\_\_\_\_部屋をルームシェアしている。家賃12万(14)\_\_\_\_\_は3人で4万円ずつ(15)\_\_\_\_\_しているという。電気、水道、(16)\_\_\_\_\_、などの公共料金と食費(17)\_\_\_\_\_、3人共通の財布を用意(18)\_\_\_\_\_。毎月1人3万円ずつ入れ、(19)\_\_\_\_\_から支払う。

住みはじめてからの(20)\_\_\_\_\_を聞いてみると、一番の(21)\_\_\_\_\_はやはり金銭面。都内で1人(22)\_\_\_\_\_住むには6万~8万円かかる(23)\_\_\_\_\_、今はその半分。公共料金(24)\_\_\_\_\_は1人で負担するより(25)\_\_\_\_\_安くて済む。一方、デメリットは、長電話(26)\_\_\_\_\_しにくいことだと言う。

インターネットでシェアメイトを探す：

(27)\_\_\_\_\_をインターネットを通して探す人(28)\_\_\_\_\_増えている。また、「一緒に暮らして(29)\_\_\_\_\_を覚えたい」という理由から、(30)\_\_\_\_\_に外国人を希望する日本人(31)\_\_\_\_\_多い。

「国際交流協会」は、シェアメイト(32)\_\_\_\_\_探す人たちの情報交換の(33)\_\_\_\_\_を設けようと、昨年8月に(34)\_\_\_\_\_を立ち上げた(<http://borderless-tokyo.com>)。シェアメイト募集の(35)\_\_\_\_\_には、日本人、外国人から多数(36)\_\_\_\_\_書き込みがある。ホームページの管理者、近藤誠二(37)\_\_\_\_\_によると、最近アクセス(38)\_\_\_\_\_が多い時は1日に200(39)\_\_\_\_\_になるという。だが、(40)\_\_\_\_\_一般には、大家さんの(41)\_\_\_\_\_が得られず、シェアを受け入れてくれる(42)\_\_\_\_\_は少ないそうだ。



[English translation by Marsden (2004)]

### *Room-sharing*

'Room-sharing' means renting a condominium or apartment communally with friends and acquaintances instead of living with family members or siblings. This is a common practice in Europe and North America and now it is also starting to become popular among young people in Japanese cities. They like room-sharing for a variety of reasons: it lets you save money on rent, it's fun, and it provides a sense of security. More and more people are learning about these advantages by experiencing room-sharing while studying abroad, and this has lowered resistance to the idea.

### **Living with friends**

Ms F (27) once shared a room with a woman from Hong Kong while living in China. Now, she shares a two-bedroom apartment in Tokyo with two friends from her university days. Each of the three friends pays 40,000 yen to cover the rent of 120,000 yen. They each also put 30,000 yen into a common purse every month to buy food and pay the electricity, water, telephone and other utility bills. After beginning this shared living arrangement, Ms F said that the cost-of-living savings were the biggest advantage. The rent on an apartment for a single person in Tokyo is 60,000 to 80,000 yen, and now she's only paying half of that. The utilities are also much lower than she would have to pay living alone. One disadvantage she mentioned was that she usually can't talk for a long time on the telephone.

### **Finding roommates on the Internet**

An increasing number of people are finding roommates on the Internet. Many Japanese people want to find a foreign roommate so they can learn a foreign language while sharing accommodation. Last August, borderless-tokyo-corp (an international exchange association) established a website where people looking for roommates can exchange information (<http://borderless-tokyo.com>). The bulletin board for people seeking roommates is full of ads from both Japanese and foreigners. According to Seiji Kondo, who manages the website, the site sometimes gets as many as 200 hits a day. However, Kondo mentioned that landlords are resistant to the idea of room-sharing, and places that allow it can be few and far between.